

**NATIONAL DEFENSE UNIVERSITY
NATIONAL WAR COLLEGE**



**A MICRO-THREAT WITH MACRO-IMPACT: THE BIO-THREAT AND THE NEED
FOR A NATIONAL BIO-DEFENSE SECURITY STRATEGY**

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The United States enters the 21st Century facing many challenges and threats. Several commissions, such as the US Commission on National Security/21st Century, cite a myriad of threats including ballistic missiles, cyber-attacks against our infrastructure, attacks using conventional weapons and attacks using weapons of mass destruction (WMD).¹ With the exception of thermonuclear war, the threat posing the greatest risk to the U.S. is a biological attack on the homeland. It is the only other one that can threaten our national survival because of its potential catastrophic results.

The threat of a bio-attack is very real. The capability of nation states and terrorists to acquire, cultivate, and disseminate pathogens is widespread. Past events and present knowledge indicate that nations and terrorists possess the intent to use such weapons. The decline of the U.S.'s public health system leaves it unable to respond to a large natural epidemic, much less an intentional one, and further suggests a vulnerability to a bio-attack greater than anytime in recent history.

Both the Administration and Congress have taken well-intentioned piecemeal actions to address this threat, but none reflect a comprehensive strategy. The contradictory laws and directives result in redundancies, inefficiencies, a waste of money, and confusion among federal, state, and local authorities responsible for responding to a bio-attack. The lack of a comprehensive national security strategy countering a bio-attack on the homeland places U.S. citizens, the very core of our national vital interests, and the nation itself at great peril. This paper assesses the credibility of the bio-threat to the U.S. homeland, reviews and assesses past Government actions to address the threat, and offers suggestions to establish a comprehensive and coherent national strategy to counter such a threat.

Assessing the Threat

The U.S. concern with bio-attacks grew following the Gulf War and the March 1995 sarin gas attack by the Japanese cult Aum Shinrikyo in the Tokyo subway. The investigations following the Aum Shinrikyo attack revealed that the cult attempted to produce and employ biological agents nine times between 1990 and 1994 in and around Tokyo², to include attacking U.S. Naval bases in Japan.³ Since then, Congress has held hearings; then President Clinton has issued multiple Presidential Decision Directives; and during the 2000 presidential campaign both party candidates continued to make this threat an issue. Current and former senior officials have described how dire the threat is. Former Department of Defense and CIA executives Ashton Carter and John Deutch claim the threat against the U.S. homeland is “greater now than at any time since the Cuban missile crisis of 1962.”⁴ Former CIA Director, Fred Woosley, and Dr. Tara O’Toole from the Center for Civilian Bio-defense Studies at John Hopkins University maintain that a bio-attack is perhaps the greatest threat the U.S. faces in the next century.⁵ And most recently, the Hart Rudman Commission echoed this theme. Its latest report stated that these weapons would be used “against Americans on American soil, possibly causing heavy casualties . . .”⁶

While each of these sources is credible, further investigation of whether a bio-attack constitutes a grave threat to the U.S. is warranted using strict criteria. Students at the National War College are taught that for “something” to be considered a true threat it must meet three criteria. A nation state or individual must possess the capability of acquiring and employing that “something” against the “target” of the attack and thereby inflicting harm; the possessor must have the intent to use it; and the “target” must be vulnerable to the effects. Without meeting these three criteria, a threat could not arguably exist.

Disease as a Weapon

Biological agents (bacteria, viruses, fungi, etc.) make humans (also animals and plants) ill and in some cases cause death. School age children are taught that various plagues ravaged Europe during the middle ages killing hundreds of thousands of people. In the 20th century, an influenza epidemic in 1918 killed nearly 20 million people worldwide, a quarter of those in the U.S. alone.⁷ Death caused by disease actually exceeds that caused by war in some instances. Since 1900, 500 million people have died from smallpox while only 320 million have died from all the wars combined.⁸ Infectious agents are indeed a very effective killer of human beings.

In modern times, disease has been used deliberately since World War I. During that war, Germans employed bio-agents in an attempt to disrupt Russian supply lines by infecting transport animals.⁹ When the U.S. entered the war, German agents operating from Silver Springs, Maryland infected military pack animals destined for the front using.¹⁰ During World War II, the Japanese conducted bio-weapons testing on Chinese prisoners and affected limited attacks on Chinese cities. The U.S., United Kingdom, and Canada had a combined bio-warfare program to use in retaliation of the first use by the Germans and Japanese. The Soviet Union also had a bio-program whose size and scope was only learned after the end of the Cold War.¹¹ Revelations following the Gulf War demonstrated that Iraq had not merely pursued bio-weapons, but actually had a very successful bio-warfare program including the weaponization of anthrax (Iraq obtained its anthrax culture from a private U.S. culture collection center in the 1980s.).¹² Their lethality has made these weapons very desirable.

Seth Carus, an expert in biological weapons at the Center for Counterproliferation Research, National Defense University, writes, “pound for pound, biological weapons are potentially more lethal than thermonuclear warheads.” Table One shows the results of a study comparing the

lethality of various modern weapons.¹³ By comparing the number of grams for each type of weapon required to kill the same number of people in a square mile area, this table shows that biological weapons are potentially *the* most efficient weapon known to man.

Bio-agent Effectiveness

Fragmentation Cluster Bomb	32,000,000
Mustard Gas	3,200,000*
Nerve Gas	800,000*
Crude Nuclear Fission Weapon	5,000
Botulinal Toxin, Type A	80*
Anthrax Spores	8*

* Calculations based on maximum possible effectiveness of agent distribution.

Table One: Grams required for achieving equal deaths in a square mile.

Even before the attempted Aum Shinrikyo attacks in Tokyo, nations examined the effects of using such agents against a civilian population. The U.S. conducted field tests in bus stations, subways, and airports during the mid-1960s to determine the feasibility and effectiveness of bio-attacks. They were found to be extremely effective. Despite its potential however, the U.S. unilaterally ended its bio-warfare program in 1969. Today, only a handful of surviving bio-warfare specialists seem to remember how potentially devastating bio-weapons could be.¹⁴ The Soviet Union, however, did not abandon its bio-warfare program. With the defection of Ken Alibek, former director of the Soviet Union's bio-warfare program, the U.S. learned that they had successfully weaponized a host of diseases including smallpox. The U.S. later learned that after the fall of the Soviet Union, many of the bio-scientists were being approached by nation states and terrorists organizations to develop bio-warfare programs.¹⁵ The revelations from the inspections of Iraq's bio-warfare program following the war, along with those of Ken Alibek's defection and the Aum Shinrikyo attacks, seemed to stimulate renewed interest in bio-attacks on the U.S. homeland.

How effective would a bio-attack on the homeland be though? Several organizations have offered assessments. The World Health Organization calculated that “50 kilograms of anthrax spores released over a city of half a million people would kill 95,000 and incapacitate 125,000.”¹⁶ Congress’ Office of Technology Assessments predicted “100 kilograms of anthrax dispersed properly over Washington, D.C., could kill between 150,000 and 3 million people.”¹⁷ These predictions, however, were based on a non-contagious agent. Mike Osterholm testified before Congress that if a contagious agent like smallpox was used, the disease could spread to several states in a matter of hours and could become a worldwide epidemic within days because of the mobility of our societies.¹⁸

Disease can also potentially “shut-down” modern countries. A 1995 outbreak of plague in India, killed relatively few, but resulted in extreme effects. These effects included countries around the world banning travel of people and goods to and from India; the Indian stock market crashed; goods and services ceased in many cities due to fear of disease and mass migration. It also led to India’s population questioning the government’s legitimacy.¹⁹ These examples reinforce the concern that bio-attacks could have potential catastrophic consequences, especially in a society like the U.S.

There are other experts who contend that nations and terrorists either will never be capable of using biological agents because they are too hard to acquire, cultivate and disseminate effectively²⁰ or that they will never intend to use them. While this may have been true several years ago, current evidence does not support either argument.

The Capability to Acquire, Cultivate, and Disseminate

Within the U.S. it is illegal to obtain biological pathogens from culture repositories without proper authorization, but the same laws are not in place overseas.²¹ Even in the U.S., many

colleges and universities have individual culture repositories that are not secured areas. Cultures of certain pathogens could therefore be easy to steal. Furthermore, any undergraduate microbiology student knows that these pathogens are ubiquitous in nature and could be easily isolated and cultured. Today a college degree in microbiology is not required to isolate and culture these pathogens. Books and Internet sites abound, providing step-by-step instructions on acquiring, cultivating, and disseminating these agents for maximum effect.²²

Skeptics point out though that even while the information is readily available, the technology does not support the use of bio-agents as weapons. The Gilmore Commission stated that cultivation and production requires “highly knowledgeable personnel, significant financial resources,” and “fairly sophisticated production facilities and equipment.”²³ This reasoning is also no longer valid. Dr. Ken Alibek states that it has never been easier to efficiently produce biological weapons. He goes on to say that covert dissemination methods are actually easier to develop than those developed for battlefield use.²⁴ Others like Randy Larsen with ANCER Corporation echo this sentiment. During presentation, Larsen shows a vial of weapons grade anthrax stimulant produced using materials found and purchased on the Internet.²⁵ He points out that merely opening the vial in a subway and letting the winds carry it would be an extremely effective means of dissemination and could infect hundreds of people. It therefore becomes evident that terrorists with the intent can obtain the capability to cultivate and disseminate biological agents.

One final argument for explaining how either a terrorist or nation state might acquire the capability to employ biological agents revolves around state-sponsored terrorism and the role of scientists from the former Soviet bio-weapons program. Presently, twelve countries have had or continue to have biological weapons programs. Of these countries, five are known to have

sponsored terrorism at one time or another.²⁶ Any of these countries could provide a terrorist or another nation with biological agents or the technology to develop them as weapons; however, the scientists from the former Soviet program pose the greatest risk. Since the fall of the Soviet Union, these bio-weapons scientists are now un- or under-employed. Much speculation has been made about either nations or terrorist organizations seeking to hire these former scientists.²⁷ Dr. Alibek says that it is only a matter of time, if it has not already happened, before some begin to accept these offers in order to provide for their families. He personally has been approached to employ his skills by foreign governments.²⁸

Despite the assertions made by the Gilmore Commission and others to the contrary, information today supports that nations and terrorists with the intent can acquire the capability to develop biological weapons and employ them. The next issue becomes whether terrorists or nation states would ever use these weapons.

The Intent to Use Bio-weapons Against the U.S. Homeland

Intent is a hard thing to estimate, especially where terrorists are concerned. There is irrefutable evidence that biological agents have been used in the past. Many nations developed bio-weapons for military use during or following World War II. Several potential U.S. adversaries such as Iraq have established them as “just another weapon” in their inventory. It is widely accepted that a number of these potential advisory states intend to fight the U.S. asymmetrically rather than symmetrically. One suggested asymmetrical approach calls for employing bio-weapons against fielded forces. Another approach anticipates their use directly on the U.S. homeland. Some security experts believe employing bio-weapons in such manner could actually deter or prevent the U.S. from entering a conflict.

With regard to domestic attacks, the Center for Nonproliferation Studies at the Monterey Institute of International Studies report shows that bio-agents were used a total of 123 times worldwide between January 1975 and August 2000. Of these uses, 93 occurred in the U.S. This report, which also tracks the use of chemical agents, shows that within the U.S., biological agents were employed over twice as many times as chemical agents over the same period.²⁹ While this report includes threats of use and does not specify the intent of the attack, Seth Carus maintains a database that shows there have been 23 documented cases between 1920 and 1999 in the U.S. where individuals or small groups employed bio-agents with the intent of producing mass casualties.³⁰ While these uses were intended as crimes, not necessarily acts of terrorism, they do demonstrate an intent by individuals to use bio-agents against U.S. citizens.

Even in the face of these numbers though, some experts continue to maintain that nations or terrorists will not employ biological weapons on the U.S. Some individuals refuse to accept the data mentioned above and maintain that the Aum Shinrikyo attempts represent a “single data point.” And since a single data point does not show a trend, bio-weapons do not represent a significant threat to the U.S. Homeland.³¹ Others maintain that the majority of the nations of the world and terrorists possess moral objections to employing biological agents because of the potential for mass casualties.³² Noted terrorist expert Dr. Bard O’Neal of the National War College disagrees. He maintains, as others do, that the past usage by the Aum Shinrikyo and the public knowledge that Osama Bin Laden seeks to obtain these bio-weapons suggests that the true intent by terrorists is to acquire and use them. O’Neal’s assessment is it is only a matter of when.³³ Dr. O’Neal also contends that as acquisition, cultivation, and dissemination become easier, biological agents may become their weapon of choice. They provide an ideal weapon for maintaining anonymity of the attacker if desired. He also believes that biological weapons,

along with chemical weapons, potentially generate more terror than conventional weapons, which is the purpose of these attacks.³⁴ If terrorists are looking for weapons that permit anonymity, produce mass casualties, and invoke more fear with less investment, bio-weapons may be their choice. While assessing intent remains subjective, as long as terrorists and nations demonstrate the desire to acquire bio-weapons, the U.S. must assume they intend to use them and prepare accordingly. Doing otherwise foolhardy.

These facts establish that nations and terrorists have shown a willingness in the past to use biological weapons and by all indications will show an even greater commitment to them in the future. But even though nations and terrorists have the capability to acquire, cultivate, and disseminate biological agents plus have shown the intent to use them, the U.S. must be vulnerable to such an attack for the credible threat to exist. The next question then is whether the U.S. is vulnerable to a bio-attack.

The Vulnerability of the U.S. to a Bio-Attack

The U.S. is vulnerable to bio-attacks if it cannot prevent them through warning, detection or an inability to react fast enough to mitigate the potential consequences. Detection depends on either real-time automated detectors or the public health system. Automated detection depends on technology while success for the public health system revolves around:

- 1) Health care providers promptly and correctly diagnosing the disease.
- 2) Laboratory technicians confirming the presence of the disease.
- 3) Quick and accurate reporting of disease presence.
- 4) Health care providers properly treating the sick.
- 5) In the case of a contagious disease, containing it.

Failure in any one of these areas suggests the U.S. is indeed vulnerable to a bio-attack.

Inability to Predict and Detect

Warning of a bio-attack against the U.S. does not seem possible according to the experts. Anthony Cordesman claims that predicting the use of these weapons “poses arguably the most daunting challenge for intelligence collectors and analysts.”³⁵ According to CIA Director George Tenet, it is extremely difficult, if not impossible, to predict bio-attacks on the U.S.³⁶ With prediction not probable, then placing its maximum effort in detection seems like a correct course of action. But, this endeavor is also viewed as un-productive. Today, within the U.S., one of the most technologically advanced societies in the world, there are no proven systems available to detect bio-attacks (other than some limited military equipment). In fact, even after hundreds of millions of dollars of research and development by Department of Defense (DOD), Defense Advanced Research Projects Agency (DARPA), and government contracted labs, there seems to be no near term technological solution to provide detection for a bio-attack throughout the entire U.S.³⁷ It therefore seems evident that that by default identifying a bio-attack falls to the nation’s public health system to be the early warning system. The public health system is a proven one having protected the nation’s citizens from disease for decades.

Inability to Diagnose Disease

When presented with patients sick from a bio-attack, U.S. health care providers would probably fail to identify and diagnose the disease. Diseases such as anthrax, smallpox, plague, Q-fever, and many others are minimally studied, if at all, in medical and nursing schools. Because these diseases are so rare, they are seen as being unimportant. In the case of smallpox, it is perceived as eradicated and therefore irrelevant. The study of these diseases, consequently, is of low priority for general study or not required at all by the majority of health care schools.³⁸ John Barlett, President of the Infectious Diseases Society of America told Congress that in

Maryland of the over 10,000 health care professionals, less than one percent could recognize a case of anthrax or smallpox.³⁹ This inability to identify these diseases by healthcare workers could result in major delays in discerning an attack had taken place. In the case of contagious diseases, not recognizing them would result in sick individuals being sent home and infecting others, thereby spreading the disease.

But if the awareness of bio-attack seems on the rise, then why haven't health care professionals studied these diseases on their own or the hospitals and clinics they work for insisted on it? Dr. O'Toole and others report that physicians and nurses "are struggling to keep up with advances in their own specialties - they are not searching for additional subjects to master."⁴⁰ Additionally, according to interviews conducted by the Stimson Institute, most of the privately owned hospitals are not willing to invest time and resources on anything that does not produce a profit.⁴¹ Dr. Alibek, who has been involved in training health care professionals, says U.S. awareness and preparedness among health care providers has not improved at all during the last decade. In fact, he believes they may be worse.⁴² Therefore, unless things change, it seems unlikely healthcare providers will diagnosis the presence of a bio-attack induced disease.

Inability to Confirm Disease

Since the healthcare workers fail in diagnosing the disease, laboratory technicians would not even be offered the opportunity to confirm its presence. In all likelihood, the cultures would not be ordered until these individuals returned to the healthcare provider feeling much worse. Health care providers would then order multiple tests to assist in the diagnosis.⁴³ But lab technicians and the labs themselves are just as unprepared as the physicians and nurses. The technicians, too, receive no schooling to prepare them for confronting bio-agents.⁴⁴ Additionally, many of the labs in the U.S. are ill-equipped and unprepared to even conduct the proper tests for

identifying these diseases; most will not run tests for these types of diseases unless specifically asked; and even the labs that are prepared will experience many delays in processing the tests due the shortage of technicians.⁴⁵ Complicating matters is the reality that once one of these highly contagious diseases is identified, only four labs certified to work with them even exist in the U.S., the latest opening in August of 2000.⁴⁶ The results of this shortfall in lab capability results in a further lag time in identifying a bio-attack. Each delay in identification results in more deaths and, with contagious diseases, more infected individuals. With each failure in the public health system, the U.S.'s vulnerability grows.

Inability to Report Disease

Diagnosis and confirmation are just the first steps though. Failure to properly report the presence of the disease prevents city, state, or federal officials from recognizing that an attack took place and responding properly. A Stimson Center report postulates that the reporting system is the “key weakness in the disease surveillance system.” It found that present regulations calling for mandatory reporting of bio-weapons related diseases are poorly enforced. It further noted that despite these regulations, hospitals vary in which diseases they require their personnel to report and the suspense for reporting varies from immediately to 10 days after confirmation. Some hospitals didn't require their lab personnel to report the confirmation of the diseases at all.⁴⁷ Stephanie Bailey, director of the National Association of County and City Health Officials testified that without this reporting, local, state, and federal officials will be unable to discern whether a bio-attack has taken place or not.⁴⁸

Compounding the reporting system problem is the fact that a majority of the nation's hospitals and clinics do not possess the high speed, secure communications means required to send these necessary broadcast reports. Estimates taken within the last two years show less than

50 percent of local health agencies possess the preferred high-speed Internet connections for reporting. Less than 46 percent of the remaining agencies possess alternative facsimile or secure telephone capability.⁴⁹ Ms. Bailey testified that the possession of these types of systems is so sporadic that while Nashville, Tennessee could alert and be alerted about such outbreaks, metropolitan areas thirty miles away would remain oblivious of anything happening outside their city limits and vice versa.⁵⁰ The first news of the surrounding area experiencing a disease outbreak would probably come through the media.

In the only full-scale simulation exercise, which tested the public health system (held in Denver, Colorado called TOPOFF) observers cited these communications as *the* critical link in determining whether a bio-attack has taken place and the extent to which it has or might spread.⁵¹ Some improvements are being made though. A new Health Alert Network (HAN) is being established, but funds are short and slow coming. To date only 37 state and three metropolitan areas (Chicago, Los Angeles, and New York City) have been equipped with this system.⁵² This effort is moving too slowly and alone will not correct the U.S.'s vulnerability to bio-attack.

Inability to Treat the Sick

Absorbing and treating the sick once an attack has taken place is vital to preventing mass casualties. The TOPOFF exercise identified a critical shortage of treatments (antibiotics and vaccines) from the onset.⁵³ Modern hospitals, because of budget concerns, use “just-in-time” stocking systems, giving them only two or three normal days of supplies.⁵⁴ The Center for Disease Control and Prevention (CDC), at the direction of Congress, developed a National Pharmaceutical Stockpile (NPS) for use by cities and states to fill these critical shortfalls. The NPS is designed as push packages, the first to arrive in 12 to 24 hours after being

requested.⁵⁵ During TOPOFF though, after delivery to Denver, distribution to the health care facilities became the hardest step. The exercise revealed that employing the NPS requires detailed planning and meticulous execution or it is useless as it was demonstrated during TOPOFF.⁵⁶ Additionally, a recent General Accounting Office (GAO) report found the management of the NPS woefully lacking. Stockpile managers use antiquated techniques such as “Post-It” notes for inventory management and stock rotation. The GAO found the stockpile to be totally untrustworthy.

The antibiotics in the NPS themselves may present another problem. Many diseases have become antibiotic resistant and these pathogens might become the agents of choice for a bio-attack on the U.S.⁵⁷ Without proper antibiotics available to treat these diseases, the U.S. becomes more vulnerable. Developing new antibiotics is a lengthy and costly endeavor. Under the best of circumstances, it would take from three to ten years before the Food and Drug Administration (FDA) would approve any one antibiotic’s use. Additionally, the research and development may cost more than most pharmaceutical companies are willing to pay.⁵⁸ Work being done today on new antibiotics will not result in a product for at least for decade.

Vaccines present additional challenges to preventing the U.S. from being vulnerable. While many of these bio-attack associated diseases do have vaccines, which provide protection or are used as the first step in treatment regimes, there are some insurmountable problems associated with most of them. First of all, wide spectrum vaccination of the entire U.S. population is cost prohibitive.⁵⁹ Additionally, a nation state or terrorist could possibly isolate and use a vaccine-resistant pathogen. And finally, indications are that many U.S. citizens would not submit to vaccinations. Many do not recognize the threat or they believe the vaccination is worse than the disease itself.⁶⁰ Consider the recent “er” television show based on actual documented cases

where a family refused to vaccinate their son against measles for this reason. The son eventually died after contaminating his school and the emergency room.⁶¹

Even if these challenges could be met though, mass vaccination could not take place because in most cases there is not enough vaccine. Estimates are the U.S. stockpile of smallpox vaccine is 7 million doses, an amount to protect far less than 7 percent of the U.S. population. Moreover, smallpox vaccine production has ceased and the efficacy of the remaining doses is in question because of its age.⁶² Similar problems exist with other vaccines. Anthrax vaccine production was halted in December 2000 for a variety of reasons with only 165,000 doses available. These are under DOD control. Plague vaccine is no longer produced and the production of cholera vaccine was discontinued in August of 2000.⁶³ While efforts are underway to restart the production of anthrax vaccine and a contract between the CDC and the BioReliance/OraVax team has been signed to produce smallpox vaccine, both of these efforts are years from producing any results. For example, the BioReliance/OraVax team's first deliveries are not expected before mid-2004. Little help should a bio-attack occur during the next four years. Additionally, the contract only calls for 40 million additional doses, still far short of the population of the U.S. that stands at 270 million.⁶⁴ Vaccines therefore do not present a method to prevent the U.S. from being vulnerable to a bio-attack.

Bed space shortages to handle the sick coupled with a potential health care worker shortage all but assures the nation's inability to handle a bio-attack of any magnitude. Over 1,000 U.S. hospitals closed in the 1990s. Many hospitals remaining open closed their emergency rooms. In the late 1990s, 30 percent of the remaining hospitals lost money to the point they reduced the number of beds available for patients.⁶⁵ During the TOPOFF exercise, authorities utilized every hospital bed, public or private. It became immediately evident that the shortage of beds was the

most critical challenge facing the health care system. Even after reopening a recently closed hospital of 200 beds, it became filled to capacity almost immediately.⁶⁶ Another example of this posing a vulnerability for the U.S. was during the December 2000 flu epidemic in Los Angeles. Hospitals closed their doors and refused to see patients because of overcrowding.⁶⁷ The number of isolation beds presents another vulnerability. No hospital in the country can deal with more than 100 contagious patients, many with less than 50. How will the sick be treated if there is a bio-attack? Some have recommended that overflow patients be transported to neighboring towns or states. If the disease were contagious though, this would present a greater risk of spreading the infection.

The shortage of health care providers and all the other personnel associated with running a hospital is also a critical problem for the health care system.⁶⁸ TOPOFF again bore this revelation out. Even with augmentation from state and federal organizations, the local hospitals, running at full capacity, found that manpower presented the next most critical challenge after the shortage of beds.⁶⁹ The 1999 West Nile outbreak in New York exemplified this shortage. Lab technicians were required to work 24 hours a day for seven days a week until augmentation arrived and was trained.⁷⁰ Health care providers and support personnel cannot work 24 hours a day and remain effective. Without relief they will become useless and more susceptible to illness themselves. Failure to prevent this could result in the complete collapse of health care.

Inability to Contain the Disease

One area that presents the foggiest challenges surrounds the containment of a contagious disease. Containment and quarantine as they relate to epidemics have not received a great deal of attention in the past decades. Therefore, no “clear, scientifically and politically sound principles” are established to allow the quarantine of areas, cities, states, or the nation as a

whole.⁷¹ Striving to keep individual rights a primacy over the last few decades, and newly enacted laws that overlap older ones have resulted in insufficient legal authority for mayors or governors to impose a quarantine.⁷² One particular study conducted in the late 1990s found that only two states, Minnesota and Texas, had "harmonized" their various laws "to create a uniform legal basis" for authorities to evoke quarantines for disease control. Colorado joined these two states in March of 2000 bringing the total to three states that could impose such quarantines.⁷³ But, having the authority does not necessarily correlate to having adequately trained and equipped resources to execute a medical quarantine. Nearly all states do not.⁷⁴ It seems unlikely that a quarantine could be easily imposed without a delay while legal experts wrangle the issues and manpower is trained and equipped. The result is the disease in question spreads, infecting more people, and exacerbating all the challenges already.

Other Challenges Adding to the Vulnerability

The final issues surrounding a potential bio-attack caused epidemic are psychological in nature. They deal with individuals worrying about their own health and the health of their families. Both of these will add to the overcrowding and result in overworking health care workers and contribute to their shortage. The first phenomenon is called the "worried well." These are individuals that are not ill, but believe they are. They will present themselves to the health care system expecting to be treated. The hospitals will already be overcrowded and the staffs stretched thin. This is exactly what happened during the 1994 plague outbreak in India where the "worried well" nearly broke the health care system.⁷⁵

The second issue is that health care workers may depart their posts due to worry for their own family's health or to prevent themselves from contracting the disease. A good example of this, again, is the plague outbreak in India. Complete staffs abandoned their hospitals to be with

their families.⁷⁶ In the U.S. where many hospitals have resorted to “just-in-time” staffing for economic reasons, every worker must be counted on to perform their job if a bio-attack induced epidemic can be brought and kept under control.

As these facts bear out, the threat of a bio-attack on the U.S. homeland is very real. It is evident that the capability, intent, and vulnerability all exist for this to be categorized as such. With the potential results of a bio-attack being so catastrophic, citizens, the military, politicians and pundits alike should consider this their number one U.S. national security concern. With this threat looming so broadly on the horizon, the question becomes, what has the U.S. Government done to tackle this national security threat?

The Government's Response

As the concern for bio-attacks grew, the federal government began taking actions designed to counter the threat. The Administration and Congress' efforts were uncoordinated though. The President, through a series of Presidential Decision Directives (PDDs), took one approach whereas Congress took another. While neither methodology was necessarily wrong, together they resulted in confusion for state and local authorities. The result has been no single federal authority, large federal funding increases devoid of coordinated purpose or oversight, a multitude of redundant and uncoordinated training programs, a plethora of overlapping federal response teams, criticized pharmaceutical stockpile, and few state and local response plans.

PDDs and Congressional Legislation

The Stafford Act, passed by Congress in November of 1988, provides for federal support to cities and states in response to a declared disaster. While the definition of a disaster is fairly narrow (“any natural catastrophe (including any hurricane, tornado, storm, high water, wind driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide,

snowstorm, or drought), or regardless of cause, and fire, flood, or explosion, in any part of the United States”), it does provide the basis for providing federal support or help for bio-attacks.⁷⁷ Once declared, the Stafford Act empowers the Federal Emergency Management Agency (FEMA) to coordinate all the federal assets required to assist a city or state in need. In response to this responsibility, FEMA began drafting the Federal Response Plan (FRP) in 1992. The FRP provides the planning assumptions, operational concepts, and specific duties for the twenty-seven separate federal agencies subject to call-up during a declared disaster. Additional precedence has been set by the President to use this law in providing federal assistance for other “man-made” disasters. Examples include the Los Angeles riots in 1992 following the Rodney King verdict and the Murrah Federal Building bombing in Oklahoma City in 1995. All in all, the Stafford Act provides an adequate vehicle for providing federal assistance following a bio-attack on the U.S. homeland. However, it does not specifically address preparing for the attacks.

Whether the Administration had this in mind or not when President Clinton issued Presidential Decision Directive (PDD)-39 in June of 1995 is not clear. What is clear is that through PDD-39, the President focused the Government on reducing U.S. vulnerabilities and specifying how the U.S. would prepare for responding to such attacks. Specifically, it required greater effort be placed in detecting, preventing, and managing the consequences (called consequence management) of all WMD attacks. It also divided the responsibility for these attacks with pre-attack actions to the Department of Justice (DOJ) and post-attack or consequence management actions to FEMA. DOJ decided its lead agency would be the Federal Bureau of Investigation (FBI) while FEMA continued to operate using its Federal Response Plan. PDD-39 also specifically directed FEMA to ensure the Federal Response Plan provided adequate consequence management for WMD attacks.⁷⁸ This gave FEMA the responsibility to

correct the vulnerabilities in the public health system. But PDD-39 also set the stage for “turf battles” over who was in charge of WMD attacks within the U.S. because of the DOJ and FEMA split in responsibilities. Determining what constituted preparing for crisis or consequence management and who was responsible became an issue that needed to be dealt with.

In September 1996, Congress joined in preparing the U.S. for a WMD attack by passing the Defense Against Weapons of Mass Destruction Act. This law suggested establishing an overall coordinator for WMD preparedness and consequence management. It directed the Department of Defense (DOD) to provide “first responder” training for police, fire, and emergency medical personnel for the largest 120 U.S. cities and the Department of Health and Human Services (HHS) to correct any deficiencies in the public health system. Additionally, it directed exercising the response plans developed by federal, state, and local governments and agencies in order to “work out” coordination issues before an actual attack took place.⁷⁹ While well intentioned, the Law merely caused more confusion about who was in charge. While the Army, DOD’s designated executive agent for WMD, and HHS executed their respective responsibilities, it became evident that their training was overlapping and did not focus on individual types of attacks. They attempted to make the training fit all situations, i.e. chemical attack, bio-attack, and nuclear attack, and did not focus on the unique specifics of each.⁸⁰ Again, the nation’s efforts were divided without anyone effectively coordinating them.

In another Law passed in 1996, Congress further muddled the waters of who was “in charge.” The Anti-Terrorism and Effective Death Penalty Act directed DOJ in coordination with FEMA to provide grants of \$5 million for first responder training. Since the law did not designate who was to conduct the training, FEMA authorized several organizations to conduct the training, providing little oversight. The Law further directed the Centers for Disease Control

and Prevention (CDC) to become involved in the WMD threat by assisting in the regulatory control of potential bio-weapon pathogens.⁸¹ This law also reinforced DOJ and FEMA's roles and brought the CDC into the ever-growing list of agencies that see themselves as responsible for this ever-growing concern. The problem was most of their actions and perceived responsibilities overlapped.

In 1998 the President added to the confusion by issuing PDD-62 that specifically addressed WMD attacks against the U.S. This PDD reinforced DOJ and FEMA's split responsibilities and DOD's training role. It increased DOJ's role by requiring it to provide equipment to state and local first responders. It then called for HHS to become the lead agency in preparing the health care community for a WMD attack and in initiating the construction of a national stockpile of vaccines, antibiotics, and other medical supplies. Finally, it called for the establishment of rapid response teams to assist local agencies respond to the demands of a WMD attack. It failed though to specify who was to be the executive agent responsible for forming, certifying, and managing these teams.⁸² While PDD-62 addressed several shortfalls in the nation's vulnerability to WMD attack, it actually did more to confuse the executive agency question.

Who's Really In-Charge?

Several studies have cited the lack of *one* federal agency leading the nation's efforts in countering the WMD threat as a principle reason the U.S. is unprepared.⁸³ Several attempts have been made to establish such a position. All have failed! The provision to establish one coordinator in the 1996 Defense Against Weapons of Mass Destruction Act never gained Administration support and therefore failed to materialize. The proposal resurfaced again in April 2000 in the House, but Administration lobbying defeated it in the Senate.⁸⁴ In 1998, the decision was made to establish the National Defense Preparedness Office (NDPO) within DOJ as

the overall coordinator for WMD preparedness, but it too is seen as a near total failure in overseeing this complex issue by its failure to produce a comprehensive security strategy to counter a bio-attack.⁸⁵ At exercises such as TOPOFF, questions abound regarding which organization is in charge. At TOPOFF, the split between the FBI and FEMA was so confusing that local authorities could not identify which federal agency was “calling the shots.” State and local authorities believe this demonstrates the Government’s inability to react to such an event.⁸⁶ Specifically within the public health community it is even worse. This community, as a whole, is not decision-oriented, but rather consensus-oriented.⁸⁷ Consensus decision-making makes developing a coherent strategy for bio-defense nearly impossible. These examples demonstrate that no one federal agency is in charge of preparing the U.S. homeland for a WMD attack and therefore, no individual or single agency is developing a comprehensive and coherent strategy or overseeing the vast amounts of money that both the Administration and Congress have “thrown” at this issue. A few specific examples may make this much clearer.

Funding Without Oversight

As of February 2001, Congress recognized forty-three separate federal agencies involved in homeland defense.⁸⁸ Each of these agencies received funding in one form or another over the past three years. As a result, the WMD preparedness and response portion of the federal budget increased over 140% between 1998 and 2000, growing from \$645 million to \$1.4 billion. 80% of the \$1.4 billion was appropriated to DOD, DOJ, HHS, and FEMA for chemical and biological preparedness and response preparation; yet only 22% went to the local level.⁸⁹ Biological preparedness received a mere 3.7% of the \$1.4 billion.⁹⁰ Multiple studies have voiced concerns about the lack of oversight over the allocation and spending of funds. These studies admit some

improvements in preparedness, but without a coherent and coordinated strategy, “overlap and duplication” in spending abound among the various agencies.⁹¹ The result is a waste of funds.

Uncoordinated Training Programs

A recent report stated that DOD, DOJ, and FEMA all coordinate and conduct training. DOD provides training through its Domestic Preparedness Program; DOJ through its own Metropolitan Firefighters and Emergency Medical Services Programs, as well as through its National Domestic Preparedness Consortium; while FEMA provides training through its National Fire Academy, Emergency Management Institute, and a whole host of separate, individual organizations. The report identified a total of over 90 separate, recognized organizations providing first responder training, yet no single training standard has been established. It went on to say that the individual programs were not coordinated and contained considerable overlap.⁹² All this despite the efforts of DOJ’s National Domestic Preparedness Office (NDPO) whose stated mission is providing the coordination and clearing house functions for all WMD training and equipment. Common training should provide for a common understanding of how to prepare and respond to a bio-attack. While present training raises awareness and provides some knowledge, until it is standardized across the nation, there will always be a risk that some local government will not be properly prepared and the result will be catastrophic.

Too Many Response Teams

DOD, HSS, FEMA, CDC, and the Veteran’s Administration (VA) all possess bio-attack specific consequence management response teams. DOD, HSS and FEMA each have response cells whose stated missions include coordinating all federal agency activities. All of these teams have received a great deal of criticism for the same reasons cited above for the training

programs.⁹³ The National Guard's Rapid Assessment and Initial Detection (RAID) Teams (later renamed Civil Support Teams to emphasize their "support" nature) in particular have come under a great deal of scrutiny over the past several years. While seen as extremely valuable by DOD, they are seen as unbeneficial by DOJ and FEMA, while local authorities question their necessity because their response times is so slow they seem irrelevant. Local communities would much rather see the funds allocated for these teams funneled into local Hazardous Material (HAZMAT) Teams and Emergency Medical Teams (EMTs).⁹⁴ It is no wonder that state and local authorities wonder who is protecting their interests.

The National Pharmaceutical Stockpile

Specific programs revolving around preparation for bio-attacks have also been disjointed. As mentioned earlier, the CDC established a potential list of pathogens they believed might be used as bio-weapons against the U.S. Then, in conjunction with the VA, they used this list to develop the NPS. They also provided this list to local authorities for use in developing their own response plans and pharmaceutical stockpiles. While this sounds like a sound approach, a recent GAO report is very critical of the list's development and use. According to the report, the list was developed devoid of any coordination with the Intelligence Community and is not based on a sound threat assessment. As was also mentioned earlier, the GAO criticized the CDC for not assisting local health care systems develop their stockpiles or requiring inventories of those stockpiles. The GAO believed this was a missed critical step before the CDC developed the NPS.⁹⁵ These criticisms, plus the before-mentioned criticism concerning the NPS's stockpile management, bring its value into question.

Developing Multiple Reporting Systems

The HHS and CDC are supposed to be responsible for solving the nation's disease reporting system, yet actually have been criticized for their efforts. While the CDC's objective reporting system is the before-mentioned Health Alert Network (HAN), the CDC continues to issue to states grants for developing their own reporting systems. The result is several state and locally developed systems that cannot "talk" to the HAN or to each other. Another GAO report criticized HHS, CDC, and the FBI's leadership and methods of providing grant monies to local communities for bio-attack preparations. The report said agencies had "varying time lines and requirements, slightly different goals, and conflicting views on priorities."⁹⁶ Again, the lack of coordination and oversight results in divergent efforts and waste.

No State and Local Response Plans Spell Trouble

But even federal programs that the state and local governments believe to be helpful and beneficial have come under great scrutiny. HHS's National Disaster Medical System (NDMS) is one such program. This program provides resources, both health care workers and supplies, to an overwhelmed local health system. Established in the mid-1980s for disaster relief, this system of public and private resources has adapted well to support the needs of a bio-attack. Specifically it provides rapid medical response (36-48 hours from notification), evacuation to other participating metropolitan hospitals, as well as VA hospitals (over 110, 000 beds total), and definitive hospital care.⁹⁷ But some experts believe that the NDMS, and other such federal programs will not work as designed without local communities having an "exercised" disaster response plan.⁹⁸ Since facts have already established that most state and local governments have not developed response plans, it is possible that none of the government's plans to combat a bio-attack will work. Again, the federal government's failure to have a coherent and coordinated

strategy requiring state and local governments to have approved and exercised plans suggests the nation is not prepared for such an attack.

So What?

Local healthcare authorities have become very frustrated with the federal government's approach to preparing the nation for a bio-attack. One local authority expressed her frustration by asking Congressmen, "What message is being sent to state and local first responders when the federal government cannot even coordinate their own efforts?"⁹⁹ It seems obvious that the citizens of the U.S. have recognized that their government has not properly addressed this threat. These are the individuals that have the most to lose should the U.S. be attacked by bio-weapons.

At this time in history, the U.S. is the sole remaining superpower in the world. Arguably, its strength is derived from its people, yet it is this very strength that is threatened by a bio-attack. Nation states and terrorists alike can acquire the capability, have demonstrated the intent, and the U.S. is surely vulnerable to a bio-attack. The U.S. therefore does indeed face a major threat like none it has faced before. Its failure to prepare for such an attack could possibly sap this country of its very strength. The federal government, in this author's opinion, has failed in its responsibility to protect its *most vital* of vital interests, its citizens, by not developing a comprehensive security strategy against bio-attacks. While many federal actions have led to improvements in the public health care system, they have not been part of a coherent policy with a specific end in sight. In other words, the means have not been directed to a specific and well-defined end. Until this is done, the nation remains at risk. Correcting the failure is not difficult. It will just take a concentrated effort. What follows are a few recommendations of how to accomplish this.

Recommendations for a Strategy

The first step in developing a security strategy is to define the desired end state. For the bio-threat, the desired end state should be: A nation prepared to respond to the threat or actual use of a bio-weapon against it. This end state would not only leave the nation prepared for a bio-attack, but it would provide the added benefit of improving the nation's public health system. As mentioned earlier, the current public health system has a marginal capability to respond to a natural outbreak of disease, much less a deliberate one. A robust defense against bio-attack would also have a deterrent effect. Why would a nation or terrorist want to attack a nation if the impact would be limited? Defense, deterrence, and improved public health are the product of the aforementioned end state.

The second step in developing a security strategy is identifying the means to achieve the end state and formulating a policy to coordinate it. The means necessary to accomplish the stated end state are already available. For the most part, they are all the programs and activities that have already been initiated by the various federal agencies identified so far. These programs need to be reviewed, refined, coordinated, and placed under a single overarching coherent policy.

The rate-limiting step in this effort is identifying an organization, agency, or individual to become the executive agent for national bio-defense. Without a single entity "leading" this effort, the U.S. will continue its present course, inefficient, ineffective, and likely to fail should a bio-attack occur. Several recent federal commissions tasked with looking at national security strategy have come to the same conclusion. All aspects of homeland defense should be subordinated under a new, cabinet level agency to correct all these deficiencies.¹⁰⁰ To this end, Congressman Thornberry (R-TX) introduced House Resolution (H.R.) 1158 on March 21, 2001, that would establish the National Homeland Security Agency (NHSA) as recommended by the

Hart-Rudman Commission. Eight days later, Congressman Skelton (D-MO) introduced H.R. 1292 that directs the President develop a comprehensive strategy for defending the U.S. homeland. Both of these bills call for the establishment of a single federal executive agent for homeland defense. Whatever version is passed, Congress and the President should enact it quickly so the resulting single executive agent (identified from here on as the NHSA) can begin its critical work.

Within a future NHSA, a deputy director position should be created specifically responsible for preparing and responding to a bio-attack. This deputy and his office would then become the overall federal executive agent for bio-defense. This deputy should have complete tasking and budget authority over all other federal agencies within the scope of this threat. Being the single entity responsible for these two major functions would ensure unity of effort for a national bio-defense.

There are some high priority items this NHSA office would have to immediately engage to correct several critical shortfalls. The first should be to thoroughly review each and every federal program, and its funding, to determine its utility and conformity with the overall strategy and policy. This review should direct modifications where necessary and eliminate redundancy and failed efforts.

A specific and separate review should include the training programs presently available. The NHSA should terminate redundant and irrelevant programs; specify the content of instruction for the remaining programs; serve as the certifying authority for all programs; and finally, establish standard training requirements for all involved organizations and individuals from the federal to local level. This is a critical step because training provides for the foundation on which all other actions are built.

Another such review should encompass the number of federal response teams. Their missions and again their value added should be scrutinized. This is especially significant for those programs that have already been criticized such as the Army National Guard's CSTs. If they provide little or no true benefit, their programs should be terminated and their funds redirected.

Continued funding of intelligence for warning and research and development for real-time automated detection should be continued. Included in this effort may include recommendations to overhaul and redirect the Intelligence Community toward this threat much as it did for thermonuclear war in the 1950s and 60s. Every effort should be made to prevent a bio-attack or provide early detection of one occurring. Mitigating the effects of an attack is central to both the defense and deterrent functions of this strategy.

Revised training and certification standards for health care and public health workers are required. The NHSA should persuade the health care education communities to voluntarily include bio-weapon topics in their curriculums. Ultimately though these changes should be mandated. Until automated detectors can be developed, the nation is dependent on the its health care providers to supply early detection and diagnosis of bio-weapon disease.

One national disease reporting system should be established and the procedures for using it made mandatory within the public health community. While it might be very expensive, it would provide time-critical warning and dissemination of a disease outbreak. Until that system is in place, interim reporting procedures require development, implementation, and enforcement. Disease reporting, next to identification, is critical to mitigating potential catastrophic results. Even if the disease were a natural outbreak vice a bio-attack, comprehensive reporting would

result in all the public health workers, health care providers, and the state and local authorities being sensitized to the presence of a disease and be better prepared to react.

Another program requiring immediate examination is the NPS. It is a critical component in the defense against a bio-attack. It has already received much criticism and requires attention. The content of the NPS inventory should be reviewed and ensure it is threat-based. It should be closely monitored and managed. It should complement those stockpiles maintained at the local level, which means establishing some mandatory local reporting. The program should also be expanded to include the vaccine program and the research and development of new antibiotics and treatments. This will require close coordination with those health organizations already involved and establishing new relationships with such agencies as the FDA. This endeavor will ensure weapons are available to fight back if attacked.

A review of who should receive mandatory vaccination should also be undertaken. Just as soldiers, sailors, airmen, and marines receive vaccinations to prepare them for bio-attacks on the battlefield, health care providers, public health workers, response teams, and others should be considered soldiers in a fight against a bio-attack. This review should also look at who would be required to keep society operating (i.e. law enforcement, sanitation, and such) in the case of an attack and consider them for vaccination. This may include the National Guard units that might be required to augment local governments. Measures need to be taken so that the nation is not totally crippled after an attack.

A final critical area would be the establishment of new laws or the “harmonization” of older ones allowing the local, state, and federal governments to quarantine individuals or entire communities to prevent the spread of disease. Contagious diseases probably present the greatest hazard and containing them is as important to the nation as being able to fight them.

While these suggestions are not all inclusive, they do represent the most immediate policy decisions needing to be established and implemented as part of a comprehensive national security strategy for bio-defense. With these immediate actions, the U.S. would be well on its way to being prepared to respond to the threat or actual use of bio-weapons. A single, designated lead federal agency for this critical area removes the concerns of local and state authorities about whom, if anyone, is in charge. Additionally, the redundancy in all programs and funding would be removed making the whole effort more efficient. A coherent policy utilizing recommendations like these would also result in making vast improvements in the nation's public health system and providing better everyday protection for its citizens. Besides, should an outbreak of disease occur, it may never be known whether it was man-induced or natural.

Conclusion

The U.S. faces a myriad of threats today. The new President must consider the risks of each, prioritize them, and then establish a security strategy to counter them. While he and his Administration have already identified the ballistic missile threat as one of the most immediate threats, there are others just as critical. The threat of a bio-attack on the U.S. homeland is one of the greatest because of the possible catastrophic results. The potential large number of sick and dead could destroy the very fabric of our society. As demonstrated, any nation state or individual has the ability to employ such bio-weapons against the U.S. While it has not happened yet, the U.S. should not become complacent. Many have demonstrated, directly or indirectly, their intent to use such weapons against the U.S. and it is without question that the nation is vulnerable to such an attack.

The Government's actions to date have been disjointed and almost dysfunctional. Actions taken by the Administration and Congress have resulted in confusion at the local and state level. They have produced a myriad of programs that are often redundant and fiscally wasteful. Taking a few simple steps to establish a coherent security strategy with a clear end state and executable policies to employ the means already in place could correct all this. The result would be a nation better prepared to respond to the threat of bio-attack or a natural outbreak of disease. Failure to take these steps though could result in a great loss of life. The citizens of this great nation are its most vital interest. Without them there is no U.S. Defense and deterrence against a bio-attack is as critical as defense and deterrence against thermonuclear attack because nothing threatens U.S. citizens more.

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